Workforce Integrated Management System (WIMS)

Configuration Management Plan

October 2004

Revision 1.0

DOCUMENT HISTORY LOG

Status (Baseline / Revision / Canceled**)**	**Document Version Number**	**Effective Date**	**POC**	**Description of Change**
Baselined	Draft 2.0	September 2004	Robin Land	Document baselined.
Revision	Draft 3.0	October 2004	Robin Land	Added Section 2.2.1, Updated A-1 and A-2 flows, and some minor cosmetic corrections.

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1. INTRODUCTION

Configuration Management (CM) is the process that is used to control all changeable components (known as "Configuration Items", CI) that support and enable the Workforce Integrated Management System (WIMS) suite of application programs. The Configuration Management (CM) Plan described in this document establishes roles and functions, defines responsibilities, and delegates authority required to execute the detailed processes that define the CM process. The basic principles behind the CM Plan are ensured stability and predictability: it is crucial that each module of the system (and the system as a whole) operate at all times in accordance with baselined system requirements. Since changes to WIMS are expected to occur persistently, the CM process is designed to ensure that all changes are: disciplined, controlled, authorized, tracked and properly released. Conversely, the CM process prohibits changes to any component of WIMS except through the described change process.

This CM Plan describes the types of changes that will occur in WIMS, describes the functions that must take place to control those changes, assigns responsibility for submittal, analysis, integration, approval and release of those changes, and establishes the governing organization ("Configuration Change Board", CCB) that will review and approve changes. No changes to the system will be permitted nor implemented unless the process described in this CM Plan is followed.

1.1 Purpose

The purpose of this document is to define the WIMS governance structure for configuration management and establishing the baselines and control of changes to configurable items (CI) within WIMS. These procedures are applicable to all CIs employed to support WIMS, including documentation, hardware, and software and system/application configuration.

1.2 Scope

CM is a critical component in the overall support of WIMS, including Implementation, Agency Rollout, and Operations, and Sustaining Support. The CM processes, organizations, techniques, and tools described in this plan apply to WIMS after it enters the Agency Rollout phase.

1.3 Principles

The basic principle of WIMS is to move NASA's administrative manpower planning from their current decentralized environments to an integrated system that is the same from Center to Center. Through the use of WIMS, NASA can tactically and strategically plan its workforce utilizing a single system accessible from one central location. This system is to be executed with identical systems tools that are disciplined and controlled centrally using accepted NASA business practices and incorporating, to a limited extent, Center tailored practices as well.

The basic principle of the WIMS CM Plan is that as changes to system components occur, they are done so only under strict and regimented controls that are designed to ensure stability, predictability and continued interoperability.

The CM process is ***not*** designed to ensure accuracy of data, correctness of processing algorithms, or system performance. CM ***is*** focused on ensuring that changes to the system are properly attributed, closely tracked to closure, thoroughly analyzed, logically packaged, and carefully integrated into new system baselines.

1.4 Goals

The goals of the CM Plan are to ensure operational stability and predictability of WIMS components and of the end-to-end system. A significant number of NASA employees will potentially interact directly or indirectly with one or more of the WIMS modules, the system components must perform expected functions correctly and must interact with its user community consistently, regardless of changes to system components. Since changes to WIMS are expected to occur persistently, the CM process is designed to ensure that all changes are: disciplined, controlled, authorized, tracked and properly released. The CM process also assigns unambiguous responsibility for change control establishing responsibility for the management of the WIMS Configuration Items contained in the Change Request System (CRS), and it defines and controls each sequential system baseline.

1.5 Definitions

- **Agency Program Manager** – During project implementation and following Agency wide rollout, serves as a member of the Configuration Control Board. Assists the Configuration Management Officer (CMO) with ensuring the integrity of the Agency Design and assists the WIMS CCB by identifying and interpreting new functional and regulatory requirements.
- **Approval** –authorization to make a change to a WIMS component by the CCB.
- **Baseline** – a point-in-time detailed specification of WIMS components that defines all aspects of a “Release” of the system. The existence of a baseline implies that all Configuration Items (1) have been formally reviewed and approved by NASA, (2) serve as the basis for further development, and (3) may be changed only through formal CM processes.
- **Withdrawn** – A CR is withdrawn when either the Center Configuration Control Board Member (applicable only for CR initiated at their Center), CR Requester, Configuration Management Officer, or the CCB determines that the CR is not a valid request.
- **Center CCB Member** - Center designee authorized to review and take action on CRs initiated at their Center. A voting member of the CCB for their Center. Responsible for clarifying CRs initiated by their Center.

- **Change Request (CR)** – the process for submitting a change or enhancement to WIMS. Change requests will be tracked throughout their lifecycle (initiation to positive resolution).
- **Configuration** - the functional and physical characteristics of WIMS (hardware, software, or a combination thereof).
- **Configuration Control Board (CCB)** – responsible for reviewing proposed WIMS CRs and approving or disapproving CRs. The CCB will meet monthly to review and take action on proposed changes. Responsible for the coordination of testing at their respective Centers and WIMS acceptance prior to a version release. Knowledgeable with regards to the Agency and Center workforce business processes.
- **Configuration Documentation** - technical documentation (drawings, parts lists, specifications, standards, interface control documents/drawings, and other documents deemed necessary by the CCB) that specifies the functional and physical characteristics of each WIMS Configuration Item.
- **Configuration Item (CI)** – any WIMS component (interface, module, report, etc.) or functionality that can be changed. A CI may be an aggregation of hardware and/or software that is treated as a single entity in the CM process.
- **Configuration Management (CM)** -- the process that ensures that system components and processes that constitute WIMS are defined and changes to them occur only under rigorous formal controls. Configuration Management (CM) is both a management and a technical discipline that directly and indirectly involves all parties to the system.
- **Configuration Control Team (CTT)** – an organization located at the WIMS Support Center (LaRC) that establishes and administers the WIMS CM Plan. The CCT processes CRs, analyzes impacts of proposed changes, prepares recommendations for Change Control Board action, and maintains CR data in the CRS. The CTT is the de facto Executive Secretary of all Configuration Control Boards.
- **Configuration Management Officer (CMO)** – Leader of the CCT and chairs the CCB.
- **Change Request System (CRS)** – tool used to request, manage, and report on CRs.
- **Documentation** – a generic term that refers collectively to models, work products, plans, reports, and specifications that describe the business system being developed or maintained.
- **Level of Urgency** – an indication to quickly disposition the CR.
- **Release** – a logical package of approved and CCB tested changes to WIMS.
- **Requestor** – an originator (WIMS User) of a Change Request.

- **System/Software Version Description Document (SVDD)** – document generated prior to each WIMS release. Identifies content of release, incorporated CRs and scope, impact, and testing and validation procedures for each CR.
- **Version** - a documented and controlled logical collection of software.

2. GOVERNANCE

The CM governance model is built on the premise that authority to approve changes to WIMS CRs is strictly reserved to specific levels of the Configuration Control Board (CCB). The Center CCB Member will assign each CR for their Center, a level of urgency prior to review by the CCB. The CCB, following review of the CR, may accept or modify the level of urgency as they deem necessary. CRs *will not* be implemented without CCB review and approval. The result of this governance model ensures that *no* changes within the scope of the CCB will be implemented without explicit CCB approval. However, emergency and special situations may dictate that CCB approval can be obtained retroactively for critical changes that must be implemented for operational continuity. In these instances, a CCB meeting will be convened to inform the CCB of the effected change.

2.1 CCB Structure and Authority

The WIMS CCB will represent the interests of the entire WIMS user community. Membership will include the Configuration Management Officer (CMO), Agency Program Manager and an appointed Center CCB member (typically the Center Implementation Lead).

The CCB will be lead by the CMO with the Agency Program Manager present. The CMO is responsible for scheduling and chairing CCB meetings, publication of meeting minutes and actions, accurate tracking and reporting of CRs and ensuring WIMS version releases reflect the decisions and actions taken by the CCB.

The Agency Program Manager's role in the CM process includes assisting the CMO with ensuring the integrity of the Agency Design and identifying and interpreting new functional and regulatory requirements.

Center CCB members are responsible for reviewing the CCB report *prior* to the monthly CCB telecon in order to proceed with the disposition of CRs during the CCB. A CCB member may also be requested to provide clarifying information as required for CRs submitted by their Center. Each Center CCB member has a single vote for the disposition of WIMS CRs.

Refer to Appendix A, pages A-1 – A-2 for a schematic diagram of the CM and CCB processes.

2.2 CCB Process

The CCB shall meet on a monthly basis. The CMO reserves the right to call CCB meetings as needed to ensure WIMS remains operational, meeting the needs of the users.

As part of the CR disposition process, the CCB will review each submitted CR and take action. The CCB *must* take action on each CR. Valid CR actions are shown in Table 1. The primary factors for determining the appropriate action, cost, schedule, and impact, will be provided by the CCT to the CCB no less than three (3) business days prior to the CCB meeting. The CCT will also provide a recommendation for disposition to the CCB. CCT technical staff will also be in attendance at the CCBs should additional information be required by the CCB members.

2.1.1 Voting and Attendance

Each CCB member will have one vote. Specific identification of CCB membership will be maintained by the CCT in the document, WIMS Agency Configuration Control Board (WIMS_Agency_CCB_List). This document will be the official membership list of the WIMS CCB and is accessible from the WIMS CRS interface.

WIMS CCBs require a quorum of no less than two-thirds attendance by CCB members in order to take action on the CRs before it. Decisions and actions shall be rendered by a simple majority. Ties will be considered a “CCB Disapprove”.

Action	Description
CCB Withdraw	CR is not considered a valid request. Withdraw actions can also be initiated by the CR Requester or the CCB member for the initiating CR.
CCB Approve	Authorization to make a change to a WIMS component by the CCB. Change will be incorporated into a future WIMS release and documented in the SVDD.
CCB Disapprove	CR is not authorized by the CCB. Change will not be incorporated into a future WIMS release.
CCB Defer	CR is placed on hold pending a future CCB review.

Table 1. Change Request Actions

~~2.6~~2.3 WIMS Configuration Control Team (CCT)

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The WIMS CCT is the process manager for the entire CM process, responsible for establishing, maintaining, and facilitating the CM process. The CCT will attend the CCB meetings to provide expertise as necessary. However, team members are not voting CCB members. The CMO functions as the *de facto* Executive Secretary of the Configuration Control Board, and is the gatekeeper and record keeper for the CM

process. The CCT will publish a CCB report no less than three (3) days prior the CCB for analysis and review by CCB members The CCB report will include schedule, cost, impact assessment (to include an identification of any risk associated with the change) and a recommendation for disposition. The WIMS CCT will maintain the baseline and will track all CRs to closure, providing status to the originator of the change. The CMO will recommend improvements to the CM process based on feedback from the CCB.

3. CONFIGURATION MANAGEMENT LIFECYCLE

The WIMS CM Process is described schematically in Figures 1 and 2 below. Figure 1 describes the "Input" segment of the CM process flow – activities which precede the submission of a CR to the CCB

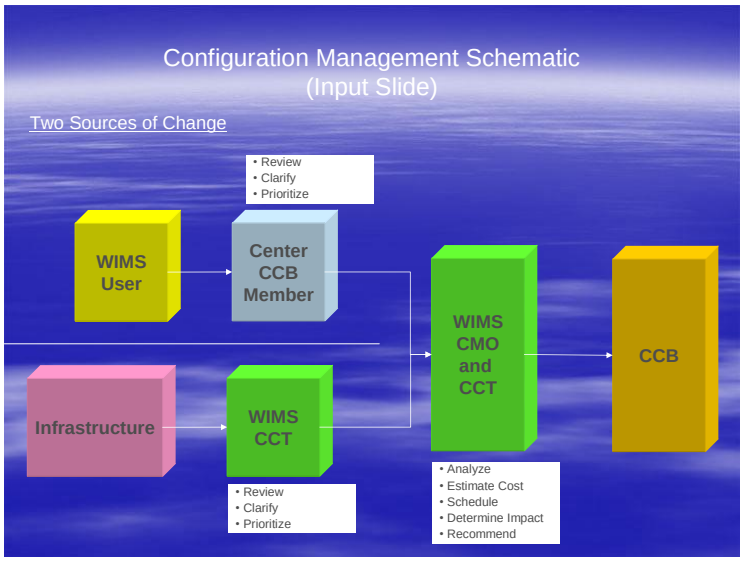

Figure 1. Configuration Management Schematic (Input Side)

3.1 Sources of Change

3.1.1 WIMS Users

By far, this category of change is the most pervasive. It also is the most complex, since the user community for WIMS is widespread throughout the Agency. User requests for change originate with the entry of a CR in the CRS by individual users; however, they must be reviewed by the CCB Member at the initiating Center to ensure that the proposed change is clear, requirements are understood, it is not outside the scope of the intended WIMS functionality, a level of urgency has been assigned, and does not generate Intra-Center conflicts. The essential operational premise of this aspect of the

CM process is that each Center's CCB Member must validate proposed process changes to application functionality *before* the proposed change is submitted to the WIMS CCT for analysis.

3.1.2 IT Infrastructure

"Infrastructure" includes all systems components on which the WIMS system operates: clients, servers, storage devices, LANs, WANs, Control Centers, the software that supports their operation and the procedures that describe operational processes. These sources of potential change are also very complex, since there are multiple "owners" of infrastructure components that support WIMS. WIMS directly owns and controls some of the infrastructure components, most notably the data servers and storage systems. Each Center or Agency infrastructure service provider is responsible for the management of their respective WIMS related IT infrastructure components and platforms.

The essential operating premise of this aspect of the WIMS CM is that potentially any change to hardware, software or operating procedures that is initiated by any of the "owners" of the components can adversely affect the operating functionality of WIMS. Therefore, end-to-end infrastructure changes must be tightly coordinated with the WIMS CMO and the Agency Project Lead. To that end, the WIMS Service Level Agreement (SLA) identifies the level of support required from LaRC and the Center utilizing WIMS.

3.2 WIMS CCT Functions

The WIMS CCT responds to CRs for any of the several categories of potential change described above, and manages and controls those proposed changes to positive closure (either implementation or disapproval). The process is described in Figure 1 above and in Figure 2 below.

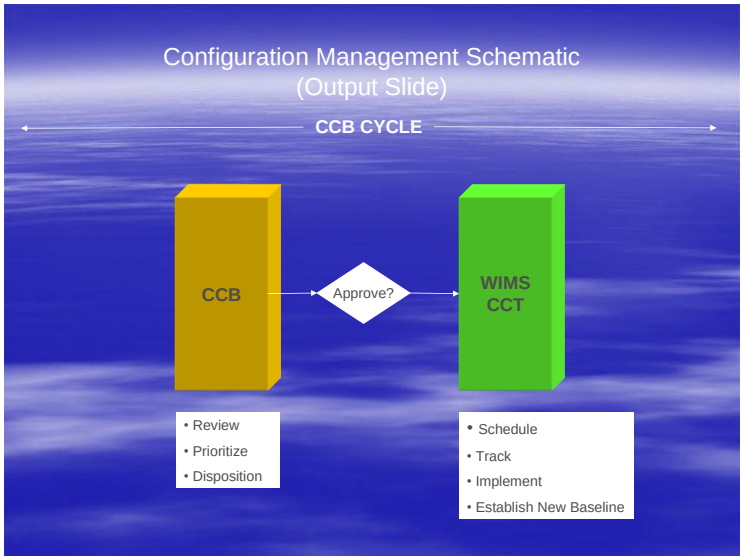

Figure 2. Configuration Management Schematic (Output Side)

The WIMS CCT will act as the *de facto* Executive Secretary of the Configuration Control Board (CCB). The general functions of the CCT are:

- Analyze CRs:
  - recommend consolidation with existing CRs
  - provide an estimate for schedule and cost;
  - provide an impact assessment
  - provide a recommendation for disposition
- Generate monthly CCB report and distribute to CCB members no less than three (3) business days prior to CCB meeting.
- Facilitate CCB decision processes
- Record CCB dispositions in CRS.
- Track approved CRs through the CM process.
- Coordinate the deployment of approved releases to the user community
- Maintain and provide status of changes in process to originator and to WIMS management
- Update new WIMS baseline(s) to incorporate most current releases
- Monitor releases to ensure conformance to established baselines

The WIMS CCT thus functions as the gatekeeper for all WIMS changes. As the *de facto* Executive Secretary of the CCB, the CMO assembles the Board members virtually to address proposed changes, supported by impact assessment and estimated cost and

schedule that have been prepared by the CCT. The CCB shall vote on the disposition action for all CRs put before it in order to ensure that future WIMS releases represent Agency consensus.

The CCT shall exercise discretion and influence in how it packages changes into logical Releases. Timing and conjunction of changes into logical Releases is a highly complex process that requires coordination between all sources of change and the entire WIMS user community. It may also require advance training of both users and WIMS support staff.

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~~3.4~~3.3 Configuration Management Processes

The CM process demands centralized control over CRs throughout the complete life cycle of the system. To that end, the CMO will utilize CM processes and tools to assist in the day-to-day management of change.

4. TOOL SUPPORT

4.1 Configuration Management Tool

The selected software solution to be used for configuration management is the Change Request System (CRS). The configuration management tool will be available in September 2004 and will be used as a tool to request system changes (change request) and manage the configuration of WIMS

5. RELEASE MANAGEMENT PROCESS

The WIMS technical architecture is described schematically in Figure 3 below. This depicted configuration will be utilized to develop, test, and deploy a WIMS releases. A single server will contain the following four (4) partitions:

- Development - WIMS develop and local LaRC test area to be utilized by LaRC CCT and developers
- System Acceptance Testing (SAT) – Agency system acceptance test area to be utilized by all Centers
- Training - WIMS training area to be utilized by all Centers
- Post Production Modification (PPM) – holding area for current WIMS release to repair fix critical defects following deployment

Three production servers will house the WIMS production release

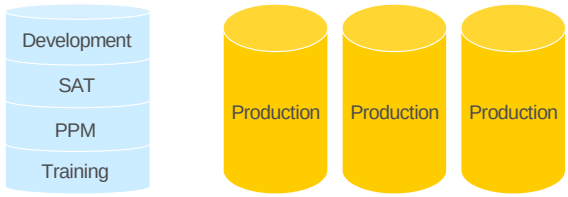

Figure 3. WIMS Technical Architecture

For standard (non-emergency) CRs the WIMS CCT will follow the WIMS Standard Release Process identified in Appendix A. The CCT will follow the emergency release process if an emergency CR is entered.

A System/Software Version Description Document (SVDD), describing the changes and the test procedures to verify the changes, will be issued to CCB members prior to a WIMS release into the SAT environment. Testing in SAT is to be coordinated by CCB at their respective Centers and is to take place during the time period indicated on the WIMS project schedule. CCB members will collect feedback from SAT testers at their respective Centers forward the feedback to the CCT for review and action.

An accepted WIMS release will be promoted to the Production and PPM partitions and a new baseline established. The update of the training partition participation will be coordinated update with the Centers to ensure no overlay of infrastructure or functionality as a Center is conducting training.

WIMS performance will continue to be monitored. Critical defect correction will be at the discretion of the WIMS CCT, with the primary focus on the correction of system functionality and possible data errors. The impact of critical production errors will be communicated to WIMS users as quickly as possible utilizing mail distribution lists and the WIMS news feature.

Refer to Appendix A, pages A-3 – A-4 for a schematic diagram of the standard and emergency release process. Refer to A-7 for a schematic diagram of the document management process.

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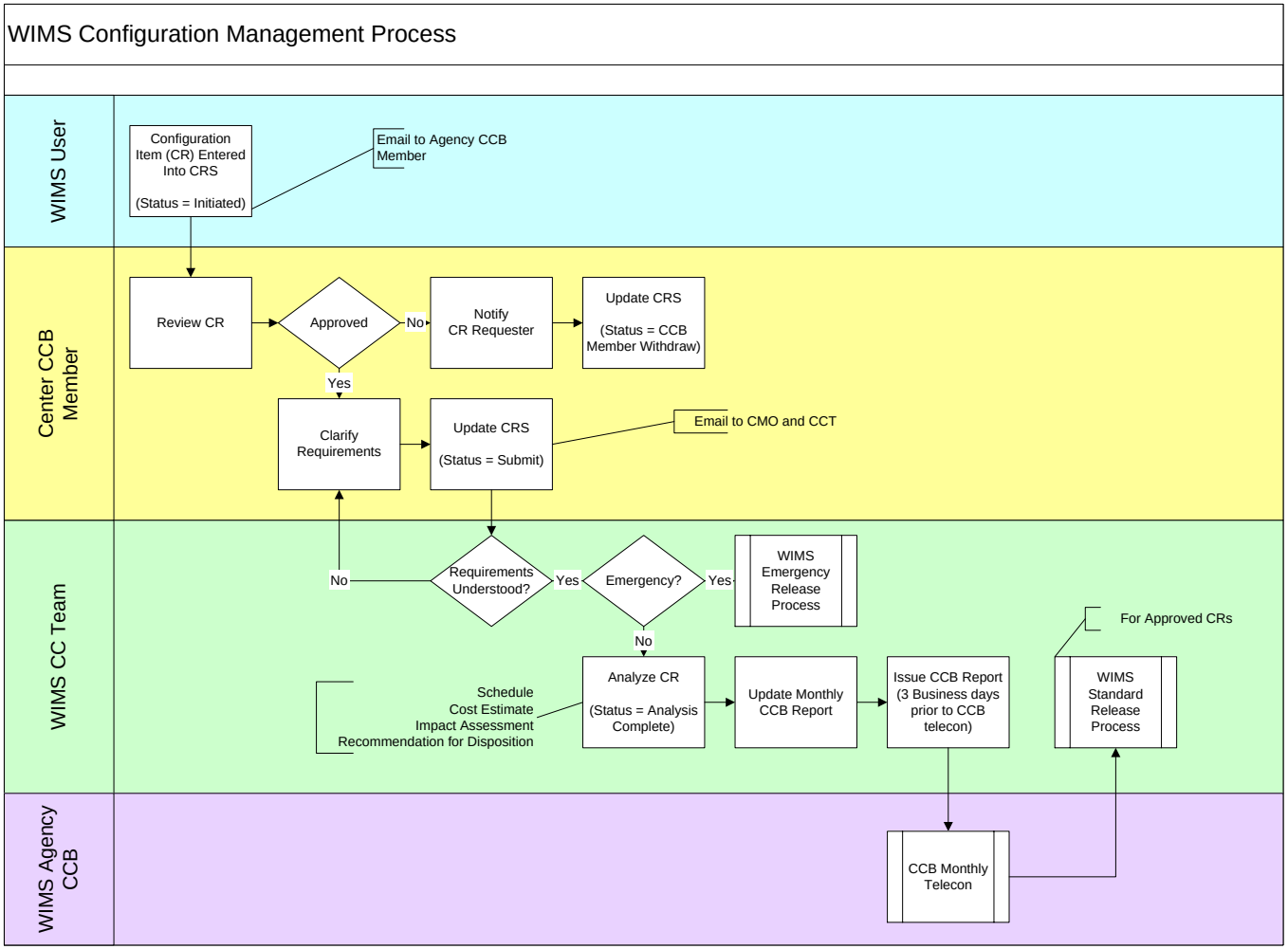
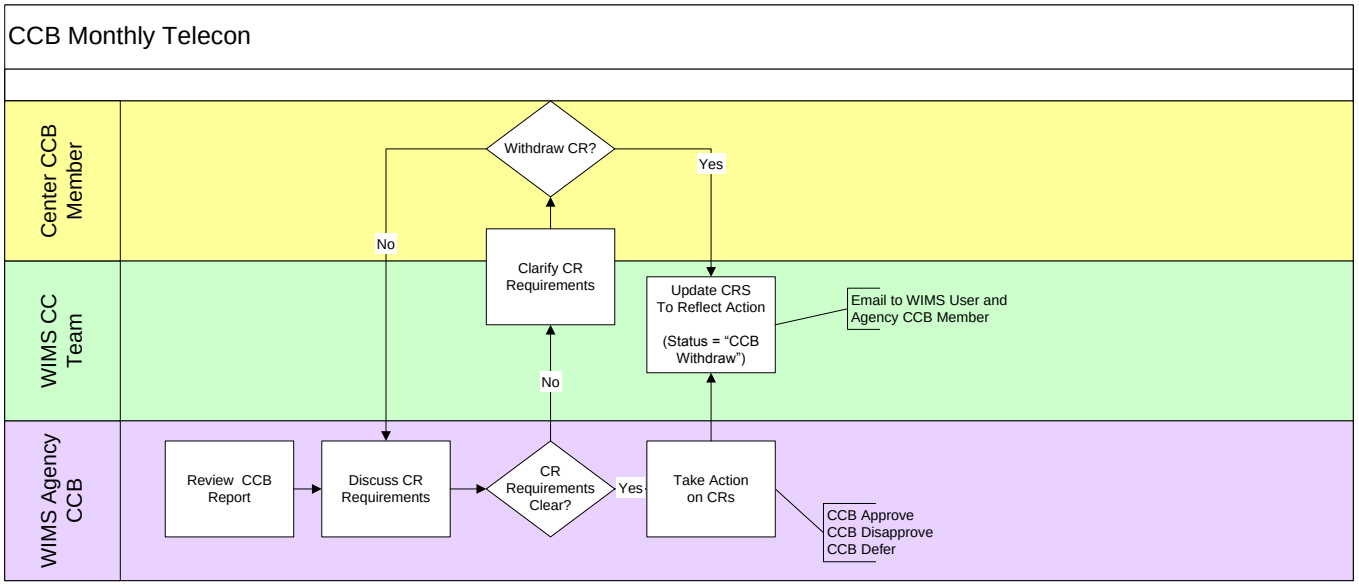
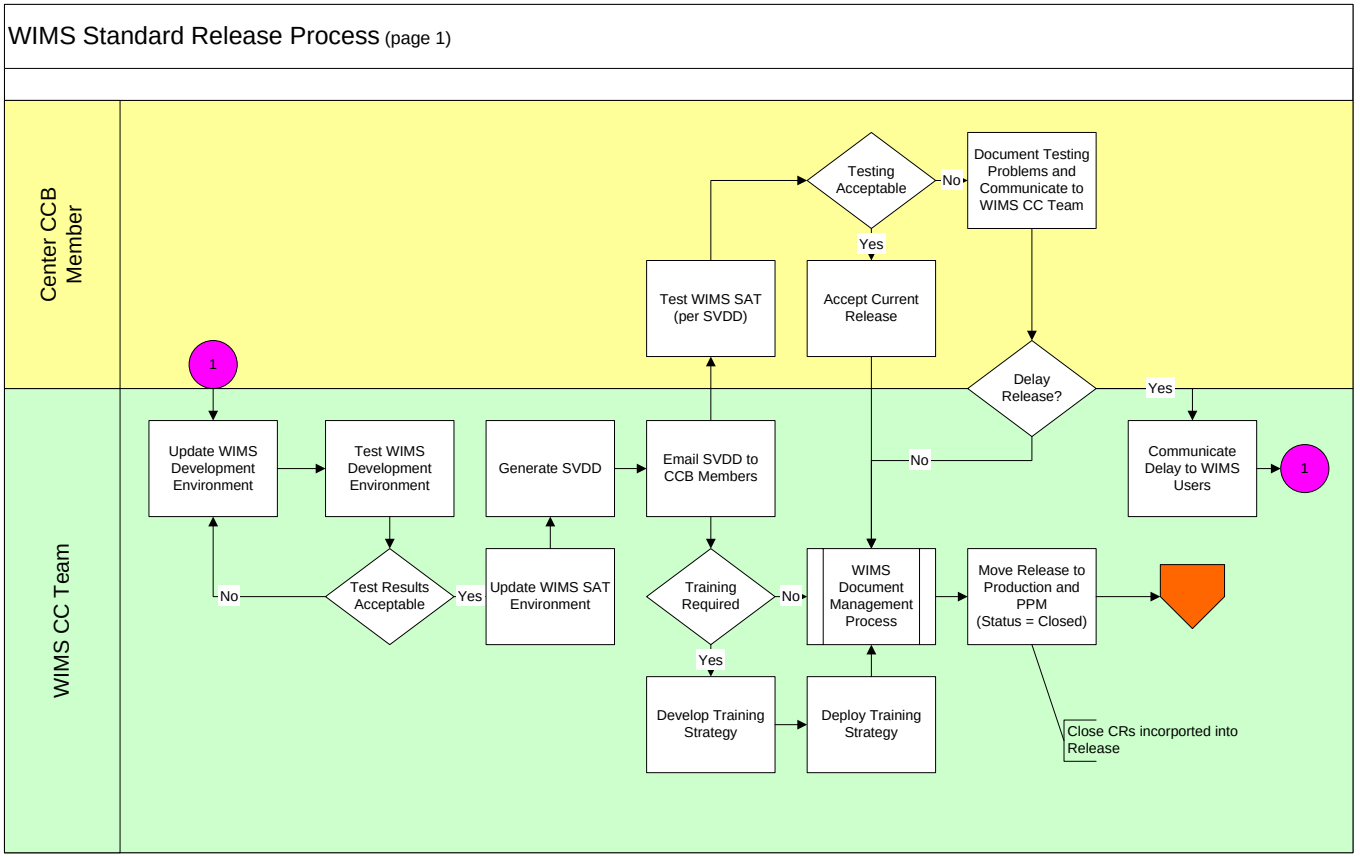
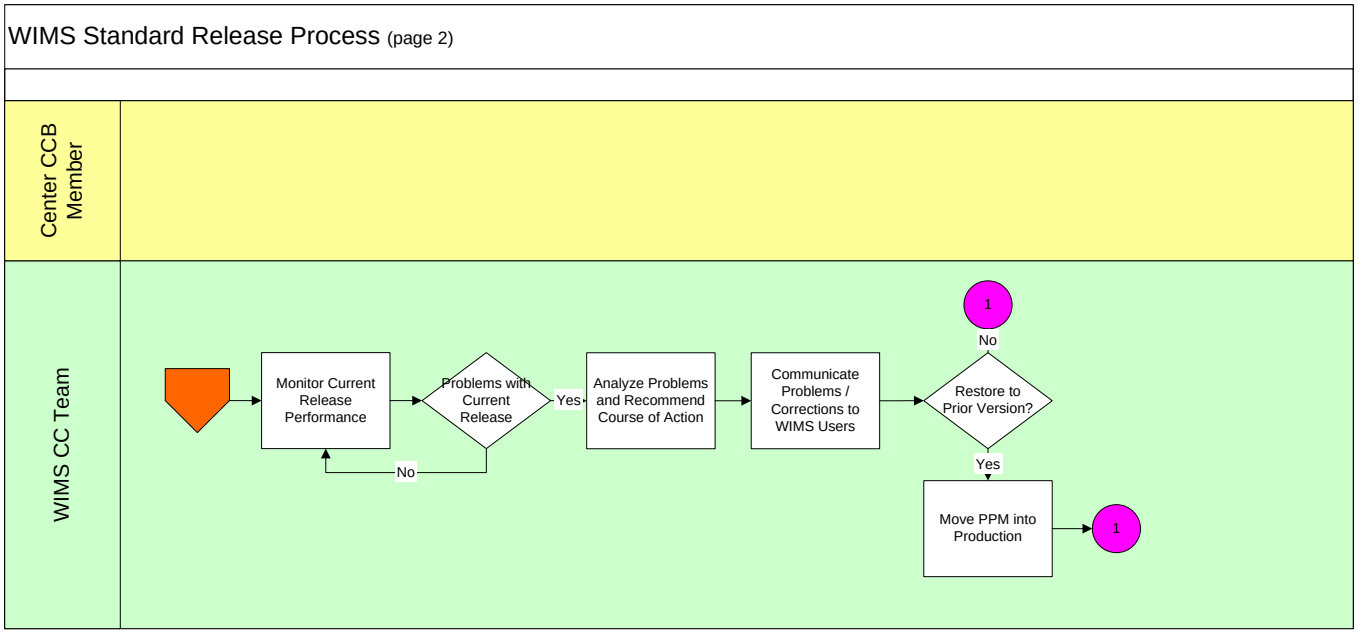
~~5.~~6. ACRONYMS

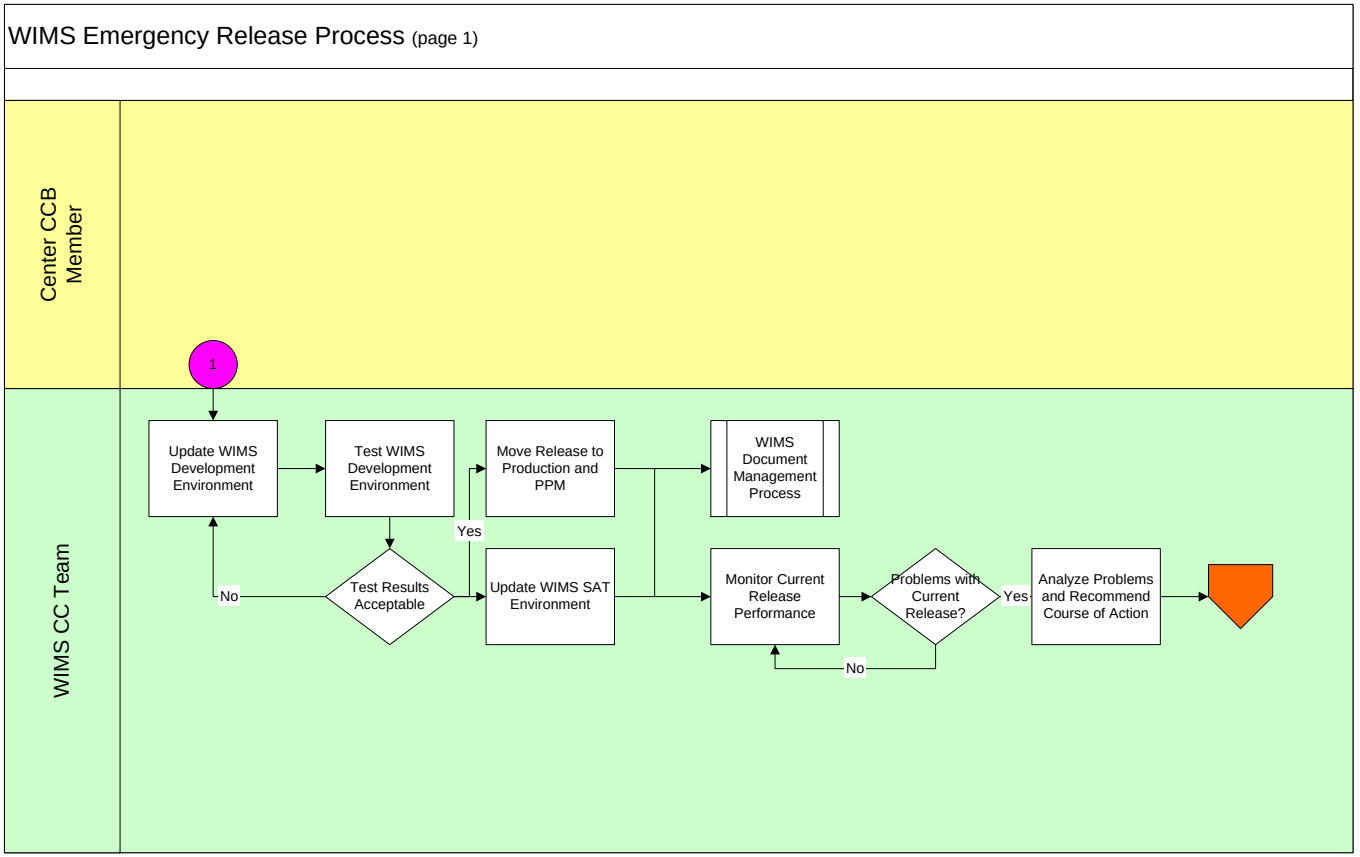
CCB	Configuration Control Board
CCT	Configuration Control Team
CR	Change Request
CM	Configuration Management
CMO	Configuration Management Officer
CRS	Change Request System
OLA	Operational Level Agreements
PPM	Post Production Modification
SLA	Service Level Agreement
SVDD	System/Software Version Description Document
WIMS	Workforce Integrated Management System

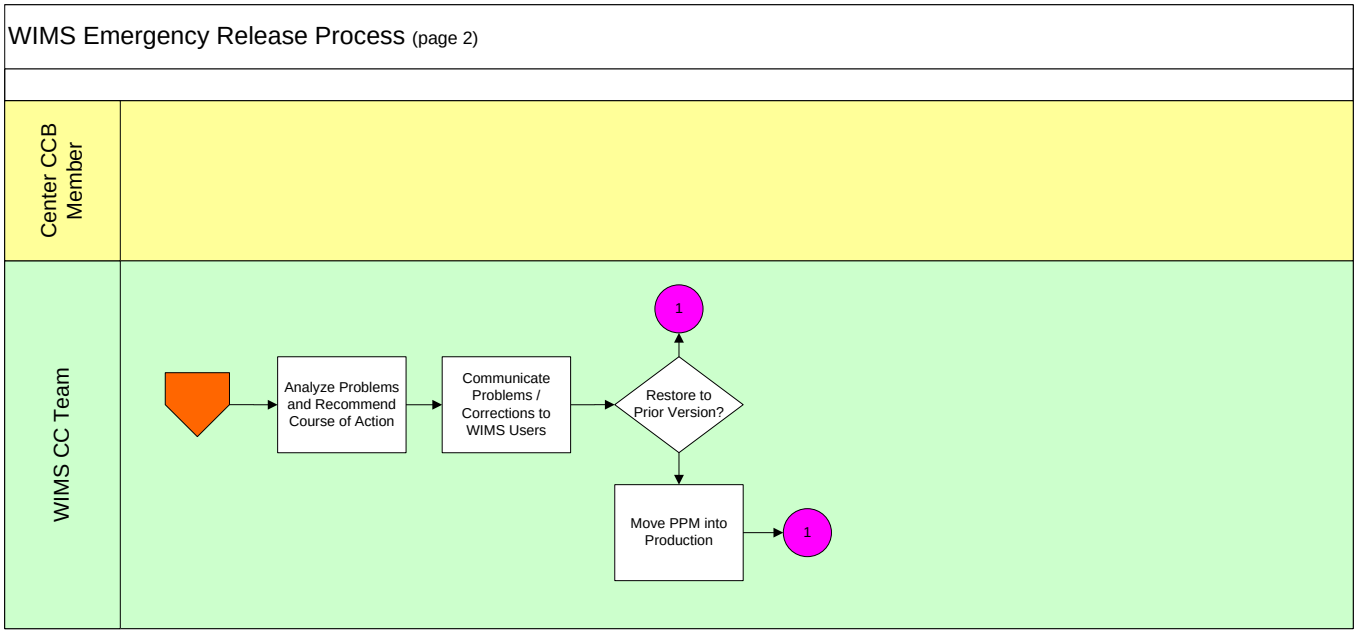

WIMS Configuration Management Process
WIMS User
Configuration Item (CR) Entered Into CRS
(Status = Initiated)
Email to Agency CCB Member
Center CCB Member
Review CR
Approved
No
Notify CR Requester
Update CRS
(Status = CCB Member Withdraw)
Yes
Clarify Requirements
Update CRS
(Status = Submit)
Email to CMO and CCT
WIMS CC Team
No
Requirements Understood?
Yes
Emergency?
Yes
WIMS Emergency Release Process
No
Schedule
Cost Estimate
Impact Assessment
Recommendation for Disposition
Analyze CR
(Status = Analysis Complete)
Update Monthly CCB Report
Issue CCB Report (3 Business days prior to CCB telecon)
For Approved CRs
WIMS Standard Release Process
WIMS Agency CCB
CCB Monthly Telecon

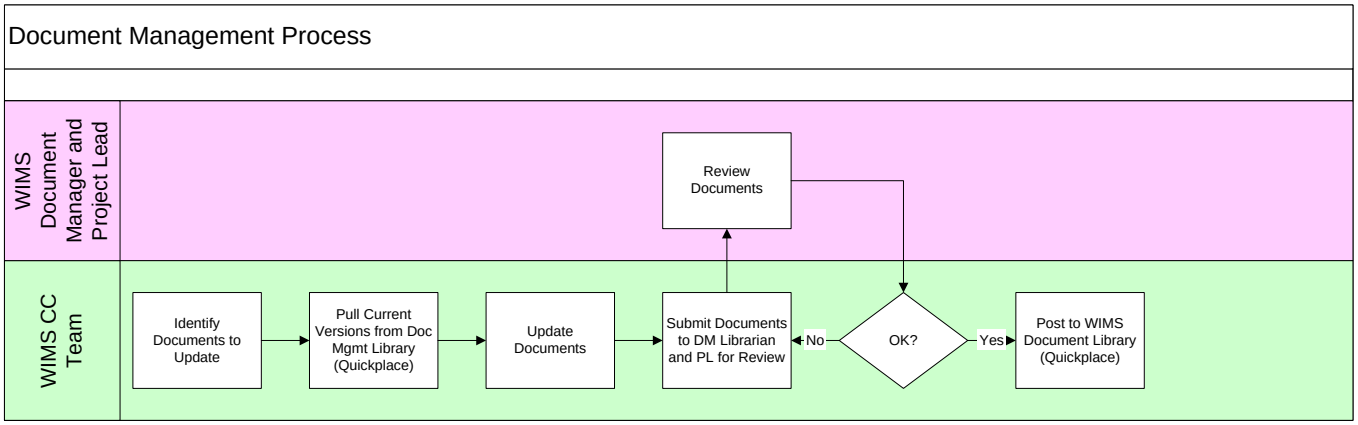

CCB Monthly Telecon
Center CCB Member
WIMS CC Team
WIMS Agency CCB
Withdraw CR?
Yes
No
Clarify CR Requirements
Update CRS To Reflect Action
(Status = "CCB Withdraw")
Email to WIMS User and Agency CCB Member
No
Review CCB Report
Discuss CR Requirements
CR Requirements Clear?
Yes
Take Action on CRs
CCB Approve
CCB Disapprove
CCB Defer


WIMS Standard Release Process (page 1)
Center CCB Member
WIMS CC Team
Testing Acceptable
No
Document Testing Problems and Communicate to WIMS CC Team
Yes
Test WIMS SAT (per SVDD)
Accept Current Release
1
Delay Release?
Yes
Update WIMS Development Environment
Test WIMS Development Environment
Generate SVDD
Email SVDD to CCB Members
No
Communicate Delay to WIMS Users
1
No
Test Results Acceptable
Yes
Update WIMS SAT Environment
Training Required
No
WIMS Document Management Process
Move Release to Production and PPM (Status = Closed)
Yes
Develop Training Strategy
Deploy Training Strategy
Close CRs incorported into Release


WIMS Standard Release Process (page 2)
Center CCB Member
WIMS CC Team
Monitor Current Release Performance
Problems with Current Release
Yes
No
Analyze Problems and Recommend Course of Action
Communicate Problems / Corrections to WIMS Users
1
No
Restore to Prior Version?
Yes
Move PPM into Production
1


WIMS Emergency Release Process (page 1)
Center CCB Member
WIMS CC Team
1
Update WIMS Development Environment
Test WIMS Development Environment
Move Release to Production and PPM
WIMS Document Management Process
Yes
No
Test Results Acceptable
Update WIMS SAT Environment
Monitor Current Release Performance
Problems with Current Release?
Yes
No
Analyze Problems and Recommend Course of Action


WIMS Emergency Release Process (page 2)
Center CCB Member
WIMS CC Team
Analyze Problems and Recommend Course of Action
Communicate Problems / Corrections to WIMS Users
Restore to Prior Version?
1
Move PPM into Production
1


Document Management Process
WIMS Document Manager and Project Lead
WIMS CC Team
Review Documents
Identify Documents to Update
Pull Current Versions from Doc Mgmt Library (Quickplace)
Update Documents
Submit Documents to DM Librarian and PL for Review
No
OK?
Yes
Post to WIMS Document Library (Quickplace)